REMARKS/ARGUMENTS

Claim Amendments

Claims 1-24 and 26-33 are pending. Claim 34 is new.

Claim 1 has been amended to add a subscript "y" to the [FF] term. It is clear from the examples and Claim 33 species listed that the [FF] term is present when a dendron is formed or is absent when a dendrimer is formed. As there are numerous examples of both of these compounds, this amendment is to ensure that all the working examples are within Claim 1 and simply corrects an obvious error in Formula (I). Also the upper limit on the number of (G) has been defined by the deGennes dense-packed stage as explained below. These amendments clarify the compounds claimed. No new matter has been introduced by this amendment.

Claim 2 has been amended to have it depend from Claim 1 and by inserting the definitions of the terms into the claim from Claim 1. This clarifies the claim for understanding that Formula (III) is a subset of Formula (I). Thus this clarifies that all the various terms are within the scope of Claim 1.

Claim 33 was previously numbered for each species claimed so that reference to specific compounds can be more easily made. Thus these numbers have no bearing on the name of any compound. One compound number is renumbered due to a typographical error. Prior compounds #5, 45 and 55-58 have been deleted. Thus the listing is renumbered. The list is claiming some species from the examples and the first entry of the term is now defined; they are fully supported from the examples. No new matter has been introduced into those listed compounds.

Claim 34 is new and provides a number for the upper limit for G term. Support for this claim is found for G=5 in Fig. 6.

Cited Art

The only art cited by this Office Action is US Patent 6,025,462, which was cited of interest only. Thus no reply to this citation is required.

At this time Applicants know of no further cited art from corresponding applications other than what has been provided on prior IDS documents.

Counterpart applications exist in several countries and several are undergoing examination. However, at this time only the following counterpart applications have issued to patent: Canadian Patent 2564780; Indian Patent 244064; Japanese Patent 4510881; Korean Patent 843362; New Zealand Patent 550604; and Singapore Patent 126542.

Rejection under 35 USC 112, second paragraph

All claims are rejected for being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, N_b and G are indefinite and requested to have a numerical range.

The dendritic polymers of this invention are more reactive than prior PAMAM dendritic polymers. Because of the use of extenders (EX) a larger interior volume can be obtained at lower generations than possible from other dendritic polymers such as PAMAM dendrimers. As the generation (G) is determined by the outward growth of the polymer from the core in a divergent synthesis, how many generations are formed or are possible is dependent on many factors, such as the (C) used for its number of sites for initial growth (N_c), the (BR) branching groups available in the branching reagent used, the bulk of the (TF) desired on the surface, and other such terms. The (G) numbering starts as 0 for the first attachment to the (C) and counts each (BR) layer outward from (C) by an integer and where the (EX) layer is a half number such as 3.5.

NSIS helps to control the number of (G) possible for a given growth of the polymer. The NSIS helps to predict when the surface gets too sterically congested to get more (BR), (EX) or (TF) (see specification p 25, ln 22 – p 26, ln 20 and p 38, ln 4 – 20). Although the present examples provide various generations, as shown in the examples and also Claim 33, as the surface reaches the deGennes dense-packed stage the congestion of these groups controls how many (G) are possible for the continued growth and varies based on the components used to make the dendrimer. This deGennes dense-packed stage has been added to Claim 1 as the upper limit for (G).

One skilled in the dendritic art would understand this surface congestion result and it is well-known from being discussed in the dendritic art and this specification as noted above.

N_b is the branch cell multiplicity as stated in the claims. Thus for a given branch cell reagent, the number of reactive 'ends' to join to the next layer of growth depends on the branch cell reagent selected. It is required that it is <u>not</u> linear – with only 2 reactive ends - but must multiply the available number of the next reactive groups. For example, one end of the (BR) joins to a reactive site on the core, and the other ends must total 2 or more reactive sites to build to the next generation by further reaction with (EX) or (BR) or when the polymer has completed growth with (TF). The (BR) used can vary in each generation of growth such that the number of free ends reacting can also change. As each generation grows to the next layer outward, the number of available reactive ends for growth increases geometrically based on the (BR) used in each layer of growth. For the larger generations this can become quite a large number, especially if the core also had a large number of sites for the initial start of growth. Thus in the formula given in Claim 1, the N_b of the first generation would be a known number based on the (BR) used, perhaps it is a different number for the second generation so that number is inserted, and so forth. As each generation has increased the 'ends' available to react, the number grows and the larger generations can have a much larger number of reactive sites. If the schemes provided with the examples are studied, it is clear that the next layer (G) in a scheme would use the prior layer for building the next (G). For example, Example 14 (p 88) and #8 in Claim 33 shows a dendritic polymer as follows:

(C) = PETGE that has N_c = 4 so it has 4 reactive sites to grow dendritic arms;

(IF) = OH where q1=4, q2=4, q3=12, q4=12, q5=36, q6=36; q7=108 with a total number of (IF) in the final dendrimer =212;

(BR) = PETGE where p1=4, p2=12, p3=36 with a total number of (BR) = 52;

(EX) = PIPZ where m1=4, m2=12, m3=26, m4=108 with a total of (EX) = 160;

(TF) = secondary amine NH where the surface has 108 present; and

(G) = 3.5.

As each layer (G) grows the number increases by the formula given in the claim. The only groups that increase these numbers are the (BR) groups - as the (EX) is linear - [but either (BR) or (EX) may provide an (IF)] -- where only one end reacts with the previous layer and the 2 or more other ends react into the next layer. The final compound is therefore defined as to the number of all terms present. These (G) can be understood for this above compound further by:

(C)=PETGE, Nc=4; and

(G)	Molecular formula	MW	z
0	$C_{33}H_{68}N_8O_8$	704	4
1	$C_{149}H_{300}N_{32}O_{40}$	3180	12
2	$C_{497}H_{996}N_{104}O_{136}$	10605	36
3	$C_{1541}H_{3084}N_{320}O_{424}$	32882	108

One skilled in this dendritic art would understand the formula in Claim 1 and the method of dendritic growth. Thus no amendment seems needed to clarify this term of N_b as it known by the knowledge of what (BR) is selected.

The amendment to Claim 2 to make it depend from Claim 1 indicates that it is a subset of Claim 1. Thus the amendment now made to Claim 1 indicates that those same parameters apply to Claim 2. This responds to the question if the terms between Claim 2 and Claim 1 are the same.

Applicants believe that all rejections have been answered and respectfully requests removal of this rejection and allowance of the claims.
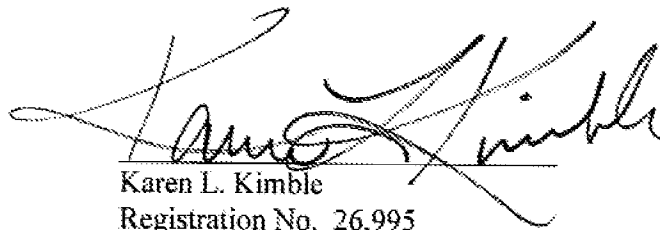
CONCLUSION

Applicants respectfully request that the examination of this application proceed. Applicants desire to cooperate with all requests made by the Examiner. Although Applicants believe that no fees are required for this Amendment, if we are in error and any fees are required, please see the first paragraph of this Amendment for the Deposit Account information.

If there are any remaining matters still outstanding in the opinion of the Examiner upon reviewing these documents, Applicants request that the undersigned attorney be contacted to resolve those matters.

Applicants respectfully request the allowance of this application.

Respectfully submitted,

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